

## ADDITIONAL OBSERVATIONS ON THE NESTING BEHAVIOR OF *TACHYSPHEX TARSATUS* (HYMENOPTERA: SPHECIDAE)<sup>1</sup>

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ABSTRACT: New information on the nesting behavior of *Tachysphex tarsatus* from lower Michigan, southwestern Ontario, northern New York, and Long Island is given.

The *pompiliformis* group is the largest *Tachysphex* species group in North America. It is characterized by the "absence of specializations" found in the other groups. This large group contains nearly 60 nearctic species with diverse behavioral and ecological characteristics (Pulawski 1988). Because of its large size the *pompiliformis* group should be separated into several subgroups with common characteristics (Elliott and Kurczewski 1985). Nesting behavior information for 14 and prey records for another six species in this group were delineated and tentative subgroups assembled (Kurczewski 1987a).

*Tachysphex tarsatus* (Say) is one of the most widely distributed species in the *pompiliformis* group in North America north of Mexico (Pulawski 1988). The nesting behavior of this common species has been studied in some detail (Kurczewski 1991). The present paper introduces new information on the nesting behavior of *T. tarsatus* from regions not examined previously such as lower Michigan, southwestern Ontario, and Long Island. The study substantiates the placement of this species, *T. laevifrons* (F. Smith), and *T. williams* R. Bohart in a common subgroup (Kurczewski 1987a, 1987b).

### Nesting Behavior

Eleven females were observed nesting in sand or fine gravel in lower Michigan, southwestern Ontario, northern New York, and Long Island. Nests were studied at the edge of a field [Allegan State Game Area, Allegan County, Michigan; 11 June 1993], rest area parking lot [Hart, Oceana County, Michigan; 12 July 1993], roadside ditch [Canfield Lake, Manistee, Manistee County, Michigan; 12 July 1993], two-track car trail [Huron Beach, Presque Isle County, Michigan; 28 June 1995; Canadian Forces Base Borden, Simcoe County, Ontario; 27 July 1996], gravel pit [1 km E Croghan, Lewis County, New York; 3 August 1996], base of dune [Hepworth Sand Dunes, Grey County, Ontario; 30 June 1997], fitness trail [Fort Drum Military Reservation, Jefferson County, New York; 5, 6, 12 July 1997], and utility power line right-of-way [Route 31,

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Westhampton, Suffolk County, New York; 25 June 1998]. The wasps nested between 0952 and 1605 h (EDT) at air temperatures of 21-33° C and sand surface temperatures of 32-43° C.

All wasps transported prey to their nests on the ground. All nests were single-celled. Entrance diameter ranged from 5 to 10 mm (mean, 7.9 mm; N=11). Tumuli in front of two entrances were 26-30 mm long, 25-30 mm wide, and 6-8 mm high. Burrows were 23 to 47 mm long including cell length (Table 1). Cells were 12 to 28 mm deep including cell depth (Table 1). Cell length ranged from 13 to 15 mm; cell height, 5 to 8 mm; and cell width, 6 to 8 mm. The number of prey per fully provisioned cell was either 1 or 2 (Table 1). All grasshoppers were placed in the cells in a head inward and ventral side upward position, even when there were two prey in the cell. Seven wasp eggs were affixed to the prey's left and four to the right forecoxa. The grasshoppers weighed (wet) 49 to 143 mg (Table 1). The wasps weighed (wet) 23 to 35 mg (Table 1). The prey Acrididae were identified as nymphs of *Dissosteira carolina* (L.) (6), *Trimerotropis maritima interior* E. M. Walker (1), *Melanoplus f. femurrubrum* (DeGeer) (2), and *Melanoplus* sp. (4), and a female nymph of a new prey species, *Chloealtis conspersa* Harris (1) (Table 1).

### Discussion

*Tachysphex tarsatus* is structurally and behaviorally similar to *T. laevifrons* and *T. williamsi*. The species belonging to this subgroup of the *pompiliformis* group omit a temporary closure of the nest entrance, capture small to large acridids, transport them in flight or on the ground depending on their size, and store one or a few prey in a single-celled nest (Kurczewski 1987a, 1987b, 1991).

Table 1. Nest data for *Tachysphex tarsatus*, 1993-1998.

Locality*	Burrow length (mm)	Cell depth (mm)	No. prey/cell	Wasp wgt (mg)	Prey wgt (mg)	Prey species
1	29	12	1	23	98	<i>Dissosteira carolina</i>
2	36	20	1	31	124	<i>Dissosteira carolina</i>
3	38	23	1	28	107	<i>Trimerotropis maritima</i>
<i>interior</i>						
4	42	20	1	24	127	<i>Dissosteira carolina</i>
5	46	28	1	26	138	<i>Dissosteira carolina</i>
6	41	22	2	34	58,77	<i>Melanoplus f. femurrubrum</i> (2)
7	37	20	1	35	143	<i>Chloealtis conspersa</i>
8	23	13	2	25	51, 49	<i>Melanoplus</i> sp. (2)
9	29	17	2	28	57, 61	<i>Melanoplus</i> sp. (2)
10	47	23	1	33	90	<i>Dissosteira carolina</i>
11	44	24	1	32	91	<i>Dissosteira carolina</i>

\*Localities numbered according to order in text.

## ACKNOWLEDGMENTS

W. J. Pulawski confirmed the identity of *Tachysphex tarsatus*. M. F. O'Brien named some of the prey Acrididae.

## LITERATURE CITED

- Elliott, N. B. and F. E. Kurczewski. 1985. Nesting and predatory behavior of some *Tachysphex* from the western United States (Hymenoptera: Sphecidae). *Great Basin Natur.* 45: 293-298.
- Kurczewski, F. E. 1987a. A review of nesting behavior in the *Tachysphex pompiliformis* Group, with observations on five species (Hymenoptera: Sphecidae). *J. Kansas Entomol. Soc.* 60: 118-126.
- Kurczewski, F. E. 1987b. Nesting behavior of *Tachysphex laevifrons* and *T. crassiformis*, with a note on *T. krombeini* (Hymenoptera: Sphecidae). *Proc. Entomol. Soc. Wash.* 89: 715-730.
- Kurczewski, F. E. 1991. Nesting behavior of *Tachysphex tarsatus* (Hymenoptera: Sphecidae). *J. Kansas Entomol. Soc.* 64: 300-323.
- Pulawski, W. J. 1988. Revision of North American *Tachysphex* wasps including Central American and Caribbean species (Hymenoptera: Sphecidae). *Mem. Calif. Acad. Sci.* 10: 1-211.

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**SOCIETY MEETING OF NOVEMBER 18, 1998**

David G. Furth  
Smithsonian Institution

**SEARCHING FOR SUMACS AND FLEA BEETLES: FROM AFRICAN POISON ARROWS TO MEXICAN POISON IVY**

The genus *Blepharida* is the primary genus in a group of about 16 genera worldwide which have similar adult and larval morphology as well as an interesting natural history in common. Recent research by Dr. Furth has increased the knowledge of the host plant relationships of these genera and a pattern has begun to emerge demonstrating a probable phytochemical relationship between the two main foodplant families Anacardiaceae and Burseraceae. Perhaps the most unusual members of this complex (*Diamphidia* and *Polyclada*) contain extremely toxic hemolytic and neurotoxic poisons concentrated in the pupal stage and have been long used by the Bushmen tribes of southern Africa to poison their arrows. The poison is fabricated by the larvae rather than being sequestered from its foodplant (*Commiphora*: Burseraceae).

Dr. Furth began studying the biology of this complex of genera in Israel and Kenya, then later in North America, Central and South America, Asia and Australia. An Asian member of this group, *Podontia lutea*, is the largest flea beetle (Alticinae) in the world, reaching almost 20 millimeters in length. Dr. Furth has just published a monograph on the New World *Blepharida* which has 38 species, 31 of which are endemic to Mexico, and 16 of which are new to science. All species feed monophagously on species of *Bursera*, except the common North American *Blepharida rhois* on sumacs and one new species feeding on the Mexican poison ivy tree (*Pseudosmodingium perniciosum*).

In notes of entomological interest, President Gelhaus brought out parts of his collection of winter craneflies. Other topics discussed were new statistics on insects and human deaths and the recently introduced Lyme disease vaccine. Bill Day introduced the slate of candidates for February 1999 Society election.

William J. Cromartie,  
Corresponding Secretary